

8.4.2 CHEMICAL NOMENCLATURE

Work directly from Zumdahl (Chapter 2). Work through exercises as required, then summarise the essentials of the section when complete.

8.4.2.1 Introduction to the Periodic Table

Discuss in the context of the Bohr Atom and subsequent Quantum Mechanical refinements

Note fundamental ordering on Atomic Number

Atomic Number	(# protons) determines element
Mass Number or Atomic Weight	(# protons + neutrons) determines isotope
Electron Configuration	(#electrons) determines charge/valency

Note fundamental characteristic of elements within a Group (same number of electrons in outermost shell)

Discuss filling of atomic orbitals with progress across the Table, and the overlapping nature of the energy of the higher orbitals, giving rise to the Transition Elements

Point out the metals, non-metals, halogens and noble gases

Learn the names, symbols and electronic configurations of the first 20 elements

8.4.2.2 Naming Simple Compounds

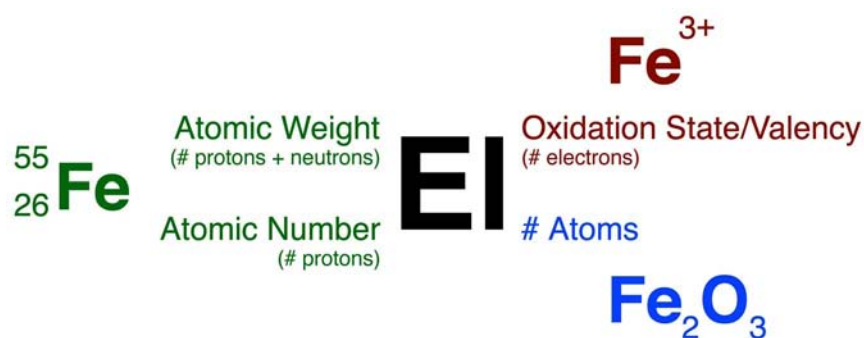
8.4.2.2.1 Binary Ionic Compounds (Type I)

Cations with only one oxidation state and common monatomic anions

8.4.2.2.2 Formulae from Names

Introduce chemical formulae

To help clarify the use of superscripted and subscripted numbers in chemical notation, consider the following illustration:



- Numbers preceding the element identifier (Atomic Weight or Mass Number—superscript—and Atomic Number—subscript) are used when describing the structure of the nucleus of an element;
- A superscript following the element identifier is used to indicate the Oxidation State of, or charge on an ion derived from the relevant element;
- A subscript following the element identifier is used to indicate the number of atoms of that element in a particular molecule, compound or ion.

8.4.2.2.3 Binary Ionic Compounds (Type II)

Cations with multiple oxidation states and common monatomic anions

8.4.2.2.4 Ionic Compounds with Polyatomic Ions

Anions comprising more than one element

8.4.2.2.5 Binary Covalent Compounds (Type III)

Compounds comprising two nonmetals

8.4.2.2.6 Acids

Molecules with one or more H^+ ions attached to an anion

8.4.2.3 Naming Organic Compounds

This material has been held over until we have dealt with the general subject of organic chemistry.

References

Chemistry (7th Ed), Zumdahl, S.S. and Zumdahl, S.A. (Houghton Mifflin, 2007)
[ISBN 0-618-52844-X] Ch. 2

Data on and photographs of the chemical elements
<http://www.periodictable.com>